AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code	Page	Of
Cost-Plus-Fixed-Fee	1	31

2. Amendment/Modification No.	3. Effective Date	4. Requisition/Purchase Req No.	5. Project No. (If applicable)
P00092	2004MAY14	SEE SCHEDULE	

6. Issued By Code W56HZV

TACOM WARREN BLDG 231
AMSTA-AQ-AHEB
LEONARD SOKOLOWSKI (586)574-7301
WARREN, MICHIGAN 48397-5000
HTTP://CONTRACTING.TACOM.ARMY.MIL
EMAIL: SOKOLOWL@TACOM.ARMY.MIL

7. Administered By (If other than Item 6) Code S2305A

DCMA DETROIT
U.S. ARMY TANK & AUTOMOTIVE COMMAND
(TACOM)
ATTN: DCMAE-GJD
WARREN, MI 48397-5000

SCD A **PAS** NONE **ADP PT** HQ0337

8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code)

GENERAL DYNAMICS LAND SYSTEMS INC.
38500 MOUND ROAD
STERLING HEIGHTS, MI. 48310-3260

TYPE BUSINESS: Large Business Performing in U.S.

Code 7W356 **Facility Code** 2D511

☐ **9A. Amendment Of Solicitation No.**

9B. Dated (See Item 11)

☒ **10A. Modification Of Contract/Order No.**

DAAE07-01-C-N075

10B. Dated (See Item 13)
2001AUG29

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ **The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers**
☐ **is extended,** ☐ **is not extended.**

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendments: (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. Accounting And Appropriation Data (If required)
SEE SECTION G

13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS

KIND MOD CODE: N

It Modifies The Contract/Order No. As Described In Item 14.

☐	**A. This Change Order is Issued Pursuant To: The Changes Set Forth In Item 14 Are Made In The Contract/Order No. In Item 10A.**
☐	**B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).**
☒	**C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of:** Exercise Option
☐	**D. Other (Specify type of modification and authority)**

E. IMPORTANT: Contractor ☐ **is not,** ☒ **is required to sign this document and return _____ copies to the Issuing Office.**

14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE SECOND PAGE FOR DESCRIPTION

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. Name And Title Of Signer (Type or print)		16A. Name And Title Of Contracting Officer (Type or print)	
		JOHN REGENHARDT REGENHAJ@TACOM.ARMY.MIL (586)574-6973	
15B. Contractor/Offeror	**15C. Date Signed**	**16B. United States Of America**	**16C. Date Signed**
_____ **(Signature of person authorized to sign)**		**By** /SIGNED/ **(Signature of Contracting Officer)**	2004MAY14

SECTION A - SUPPLEMENTAL INFORMATION

CONTRACT FOR: ABRAMS SYSTEM TECHNICAL SUPPORT (STS)

CONTRACTOR: GENERAL DYNAMICS LAND SYSTEMS (GDLS) INC.
STERLING HEIGHTS, MICHIGAN

THIS ACTION: P00092 to DAAE07-01-C-N075

CURRENT AMOUNT: $466,003,619.00

THIS ACTION: $ 16,150,000.00

NEW AMOUNT: $482,153,619.00

1. The purpose of modification P00092 is to (a) exercise existing options in accordance with paragraph B.2. and (2) add language in Section C.3.2,d.

2. In accordance with paragraph B.6, CLIN 0053 is established to acquire MWO Hardware and perform vehicle retrofit upgrades to M1A1 and M1 A2 SEP Abrams vehicles. CLIN 0005 Option 1 and Option 2 rates are being used for this effort. The funding is broken out as follows:

Labor/manhours : $6,130,356.00 ($5,624,118 cost, $506,238 fixed fee)

Materials: $10,019,644.00 ($9,197,904 cost, $821,740 fixed fee)

9330.00 labor/manhours are being added at an Option 1 rate of $63.14 ($57.91 cost, $5.21 fixed fee). 78,901.61 labor/manhours are being added at an Option 2 rate of $70.23 ($64.43 cost, $5.80 fixed fee) Authorized labor/manhours are increased from zero (0) to 88,231.61. Authorized material is increased from zero (0) to $10,019,644.00. The total CLIN amount is increased from zero (0) to $16,150,000.00. 78,901.61 labor/manhours are being added at an option 2 rate of $70.73 ($64.43 cost, $5.80 fixed fee).

3. This action is being accomplished on a page substitution basis. The attached pages are replacement pages to the contract. As a result of this action, the total amount of the contract is increased by $16,150,000.00 from $448,317,158.00 to $464,467,158.00.

4. Option 1 Labor/manhours, material and subcontracting pools are adjusted as follows:

Labor/manhours:	Material Ceiling:
11,099,808 available hours	$208,719,099 available material pool
2,875,579.70 Hours used to date	$ 88,719,608 Mat'l $$ used to date
9,330.00 Hrs exercised this action	$ 10,019,644 Mat'l $$ this action
2,884,909.70 Total Option Hrs authorized	$ 98,739,252 Mat'l $$ authorized
8,214,898.30 Available Option Hours	$109,979,847 Mat'l $$ Available

Subcontracting Ceiling:
$ 60,796,106 Available Subcontracting pool

$ 13,032,289 Subcontracting $$ used to date
$ -0- Subcontracting $$ this action
$ 13,032,289 Subcontracting $$ authorized

$ 47,763,817 Available Subcontracting

5. Option 2 Labor/manhours, materials, and subcontracting pools are adjusted as follows:

Labor/manhours:	Material Ceiling:
6,759,467 available hours	$107,768,545 available material pool
495,797.54 Hours used to date	$ 25,379,591 Mat'l $$ used to date
78,901.61 Hrs exercised this action	$ -0- Mat'l $$ this action
574,699.15 Total Option Hrs authorized	$ 25,379,591 Mat'l $$ authorized
6,184,767.85 Available Option Hours	$ 82,388,954 Mat'l $$ Available

Subcontracting Ceiling:
$ 46,777,365 Available Subcontracting pool

$ 1,000,000 Subcontracting $$ used to date
$ -0- Subcontracting $$ this action
$ 1,000,000 Subcontracting $$ authorized

$ 45,777,365 Available Subcontracting

*** END OF NARRATIVE A 072 ***

Name of Offeror or Contractor: GENERAL DYNAMICS LAND SYSTEMS INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS				
0053	ABRAMS MWOS SECURITY CLASS: Unclassified NOUN: MWO HARDWARE & APPLICATION TO FIELDED VEHICLES LABOR/MANHOURS: BASE HOURS: 9,330.00 OPTION 2 HOURS: 78,901.61 TOTAL BASE PERIOD DOLLARS: ESTIMATED COST: $540,487 FIXED FEE: $ 48,609 TOTAL: $589,096 TOTAL OPTION PERIOD DOLLARS: ESTIMATED COST: $5,083,631 FIXED FEE: $ 457,629 TOTAL: $5,541,260 MATERIAL AUTHORIZED: $10,019,644 MATERIAL COST: $ 9,197,904 MATERIAL FEE: $ 821,740 TOTAL MATERIAL COST: $10,019,644 TOTAL CUMULATIVE FUNDING: $16,150,000 GOVERNMENT APPROVAL OF EFFORT AND SCHEDULE FOR PERFORMANCE THROUGHT 31 JUL 2006 IS SUBJECT TO GOVERNMENT EXERCISE OF OPTION IN ACCOURDANCE WITH OPTIONS IDENTIFIED IN SECTION B. * Page/CLIN ADDED BY P00092 (End of narrative B001)				

Name of Offeror or Contractor: GENERAL DYNAMICS LAND SYSTEMS INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0053AA	ABRAMS MWOS				$ 14,030,818.00

NOUN: ABRAMS MWOS
PRON: 474FUM0247 PRON AMD: 01 ACRN: FS
AMS CD: 31206406017

Inspection and Acceptance
INSPECTION: Destination ACCEPTANCE: Destination

Deliveries or Performance

DLVR SCH REL CD	QUANTITY	PERF COMPL DATE
001	0	30-SEP-2006

$ 14,030,818.00

Name of Offeror or Contractor: GENERAL DYNAMICS LAND SYSTEMS INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0053AB	ABRAMS MWOS				$ 1,503,650.00

NOUN: ABRAMS MWOS
PRON: 473FUM0247 PRON AMD: 01 ACRN: DK
AMS CD: 31206406019

Inspection and Acceptance
INSPECTION: Destination ACCEPTANCE: Destination

Deliveries or Performance

DLVR SCH REL CD	QUANTITY	PERF COMPL DATE
001	0	30-SEP-2005

$ 1,503,650.00

Name of Offeror or Contractor: GENERAL DYNAMICS LAND SYSTEMS INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0053AC	ABRAMS MWOS				$ 615,532.00

NOUN: ABRAMS MWOS
PRON: 472FUM1347 PRON AMD: 01 ACRN: BV
AMS CD: 31206406020

Inspection and Acceptance
INSPECTION: Destination ACCEPTANCE: Destination

Deliveries or Performance

DLVR SCH REL CD	QUANTITY	PERF COMPL DATE
001	0	30-SEP-2004

$ 615,532.00

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

SECTION C

General: The contractor, as an independent contractor, and not as an agent of the Government, shall furnish Systems Technical Support for the Abrams Tank Systems, Abrams Tank Derivative Systems (including FMS Models) and the M48A5/M60A1 Armored Vehicle Launched Bridge (AVLB), M60A3 Tank Thermal Sight (TTS), other M48/M60 Vehicle Configuration, as well as the Air-cooled Vee Direct-injected Supercharged (AVDS) 1790 engine and associated parts and equipment, as specified in herein and Exhibit A and the Contract Data Requirements List (CDRL) of the contract. In addition, the contractor shall also provide Systems Technical Support for Abrams Derivative Vehicles. The engineering related technical support functions required include the following:

C.1 Management and Administration
C.2 Engineering Support
C.3 Contractor Field Service Representative (CFSR)
C.4 System Engineering
C.5 Product Assurance
C.6 Integrated Logistics Support (ILS)
C.7 Configuration Management (CM)
C.8 Design Improvement Investigations
C.9 Analysis of Field Problems
C.10 Software Support Equipment
C.11 Military Packaging Development
C.12 Support for Government-Furnished Vehicles
C.13 System Test Program Description
C.14 RAM-D Program
C.15 ILS Automated Data Processing (ADP) Systems Development
C.16 Special Tools and Support Equipment
C.17 Modification Work Order (MWO) Planning
C.18 Technical Training Support
C.19 Training Equipment
C.20 Special Projects
C.21 Total Package Fielding
C.22 Depot Logistics Engineering
C.23 Technical Data Package (TDP) Revisioning Services
C.24 Publications
C.25 Development Of Improvements to Contract Vehicle Systems
C.26 Year 2000 Compliance

C.1 Management and Administration:

C.1.1 The contractor shall manage and control the resources necessary to ensure timely achievement of all of the requirements of the contract in a manner that is both most economical and most beneficial to the Government. Management and control of subcontractor performance is implicitly part of this requirement.

C.1.2 The contractor shall coordinate management and control of subcontractor activity with the Government. This requirement is not intended to provide the Government opportunity for subcontractor direction. Rather, the requirement is advisory. The contractor is solely responsible for direction of, and interface with subcontractors.

C.1.3 The contractor shall provide administrative support to the Abrams Program Manager for selected Government briefings and presentations.

C.1.4 The contractor shall prepare and furnish color photograph productions, posters, color brochures, viewgraph transparencies and electronic media to support Government briefings and presentations.

C.1.5 The contractor shall conduct the meetings listed below quarterly unless otherwise indicated. The content and location of the meeting shall be coordinated with and agreed upon by the contractor and the Government at least two (2) weeks prior to the meeting. The contractor shall prepare minutes of each meeting in contractor format.

a. Management Review.
b. Technical Review As Required.
c. Integrated Logistics Support (ILS) Program Status Review.
d. Integrated Logistics Support Management Team (ILSMT).
e. Logistics Management Review (LMR).
f. Field Problem Review Board (FBRB).
g. IPR's Publication

C.1.6 The contractor shall also comply with Government request for briefings and informal technical review meetings. The contractor shall prepare electronic, written or visual presentations for such briefings or review meetings as required.

C.1.7 The contractor shall receive, respond to, and track Government requests for information, investigation and analysis. The time frame for a response may be as short as 24 hours and will be indicated at the time of the request. The contractor shall operate a closed-loop reporting system for such requests to ensure a complete and timely response. The contractor shall fully coordinate each response and address the effect on the system to include, but not be limited to, engineering, logistics, reliability, maintainability, quality, safety, human-factors, producibility and historical background, as appropriate.

C.1.8 Work Directives (WDs) and WD Matrix:

C.1.8.1 All work under this contract is completed in accordance with Work Directives and matrices agreed to by the Government and contractor. The contractor shall prepare and furnish proposed WDs as required, or requested by the Contracting Officer. The contractor shall have a single centralized Point of Contact (POC) to submit proposed WDs to the Contracting Officer and assure that WDs comply with this clause. The proposed WD shall be written with the purpose of providing the Contracting Officer a suitable document that will enable the contractor to perform specific tasks with associated performance period upon execution. Language that includes unexplained acronyms and technical jargon shall not be used. The proposed WD shall clearly and simply state the requirements with reference to Section C but without merely reiterating the language in Section C. The contractor's format for the WD document is acceptable, but it shall be uniform for all WDs prepared and include as a minimum the information listed below:

a. Reference to the specific requirement(s) by Clause of Section C with applicable DID and CDRL sequence numbers. The contractor shall only submit WDs within the scope of the contract.

b. Objective of the work to be performed.

c. Number of hours to accomplish the work.

d. Estimate completion date as applicable. The contractor shall specify delivery dates for data items required by the work directive.

e. Identification of the Contract Line Item Number (CLIN) under which the work is to be performed.

C.1.8.2 The Contracting Officer shall establish priorities for contractor performance on work directives and shall review with the contractor the priorities and ranking on all active work directives as required. The contractor shall redirect all work on any and/or all work directives within the available funding limits of the contract when so directed in writing by the Contracting Officer.

C.1.8.3 Work directives shall not be submitted for projects for which any portion has been previously submitted on a work directive and was disapproved during the last 90 day period, unless specifically requested to do so by the Contracting Officer. Duplication of work covered by a previous work directive shall be sufficient basis for disapproval of a proposed work directive.

C.1.8.4 The Contracting Officer has the option to modify or cancel WDs, in whole or in part, and change the relative priorities assigned. Active WDs may be canceled at any time by the Contracting Officer, and the contractor will be notified in writing of the reason(s) therefore. If additions, deletions or revisions to a WD are necessary, or when authorized hours and/or material dollars remain at the completion of a WD, then the contractor shall prepare a Supplemental WD to reflect the addition, deletion or revision or reduce the authorized hours and/or material dollars by the residual amounts as required. A supplement which revises the scope or increases hours or material shall also be completed. The Supplemental WD denoting the addition, deletion or revision shall be assigned the original WD number with a suffix to denote the revision. Supplemental WDs to reduce hours or material dollars shall be submitted at the earliest possible date, but not later than 90 days after completion of work on the basic WD.

C.1.8.5 The contractor is not authorized to incur hours, materials or subcontracting that exceed the estimate on each executed WD. Any hours,materials or subcontracting in excess of that authorized is at the contractor's risk, and the Government has no obligation to accept the cost of hours, materials or subcontracting above that authorized. Anytime the contractor has reason to believe that the hours, materials or subcontracting that it expects to incur in the performance of a WD shall exceed the authorized hours, materials or subcontracting on the WD, the contractor shall notify the Contracting Officer in writing.

C.1.8.6 The parties agree that the processes for control of work directives may be streamlined. Towards that end the parties agree to alternative STS WD Matrix funding management. The parties agree to use this procedure to manage hours, material dollars and subcontract dollars authorized by work directives for CLINs having multiple work directives using the same type funding.

C.1.9 The contractor shall submit a Monthly Expenditure Report for each funded CLIN, in contractor format. See Exhibit B.

C.1.10 Disposal of Hardware:

C.1.10.1 The contractor shall repair any such hardware if within the contractor?s capability and if requested by the Government.

C.1.10.2 The contractor shall identify excess hardware in National Stock Number (NSN) sequence to the Contracting Officer in a letter requesting disposition instructions, copy furnished to (PM) Abrams Logistics Management Division. Non-standard and obsolete hardware shall be identified as such. The contractor's request for disposition shall include the following information for each item: NSN, Part Number (P/N), Nomenclature, and Condition of the Item (serviceable or unserviceable). The Government will provide disposition

instructions within 60 days unless there is a mutually agreed upon extension. A copy of shipping documentation shall be provided to PM Abrams Logistics Management Division.

C.1.10.3 No parts shall be reported to the DCMAO Plant Clearance Officer unless so directed by the Contracting Officer. The disposition letter identifying items to be reported to DCMAO shall be referenced on the Inventory Schedule B submitted to DCMAO.

C.1.10.4 The contractor shall provide a written request for disposition of all excess residual Government-owned hardware within 60 days after work under this contract has ended unless there is a mutually agreed upon extension. Parts listed shall be consolidated to include residual hardware from all contractor departments/organizations and from all WDs.

C.1.10.5 No WD shall be closed until disposition instructions on excess residual hardware have been implemented and completed, unless the contractor can utilize hardware on future work under the contract.

C.1.10.6 Mandatory replacement parts with a recoverability code of "Z" shall be discarded in accordance with Federal, State, and Local Policies without government disposition instructions. Hazardous materials will be disposed of utilizing contractor procedures with related costs to be charged to the contract.

C.1.11 Data Items

C.1.11.1 Copies of standard DIDs referenced in this contract may be obtained from Naval Publications at the following address:

Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120

C.1.11.2 Tailored and nonstandard DIDs unavailable through normal channels will be furnished with this contract.

C.1.11.3 Except for those items that specifically require hard copy submission, all data specified in this contract shall be provided to the Government electronically when efficient and practical.

C.2 Engineering Support:

C.2.1 The contractor shall perform necessary support to in-production vehicles including but not limited to design, system integration, human factors, reliability, maintainability/testability/verification testing and safety engineering, drafting, and Configuration Management (CM).

C.2.1.1 Subject to the above, such effort shall include design review, design revision and changes to the Technical Data Package (TDP) and will normally be undertaken when problems cannot be resolved by the application of manufacturing solutions or when any such solutions may impact design.

C.2.1.1.1 Prepare calculations, layouts, drawings, sketches, schematics, charts and other visual depictions, purchase descriptions, specifications, cost effectiveness studies or analysis and recommend Engineering Change Proposal (ECP) for current and future production versions of the systems and modifications thereto.

C.2.1.1.2 The contractor shall provide necessary interface and liaison as required by the Government.

C.2.1.2 Waiver and Deviations and ECPs: On segments of the TDP where the Government retains control (prime item product fab spec/system spec/fir), the contractor shall:

a. Provide timely evaluation(s) and recommendation(s) for production waiver and deviations to the systems.

b. Provide engineering input for cost reduction reviews.

c. Review problems reported on items released for production.

d. Provide engineering input for evaluations relative to alternative fabrication and assembly techniques.

e. Provide necessary reliability and maintainability analysis.

C.3 Contractor Field Service Representative (CFSR):

C.3.1 The contractor shall establish a Contractor Field Service (CFS) Program. The contractor shall provide all administrative support and site supervision for the Abrams CFS Program as described herein. The contractor shall provide Field Service Representatives (FSR) who shall provide technical repair and assistance as required and shall advise, make recommendations, to orient and instruct key

Government personnel with respect to operation, maintenance, repair and parts supply for the vehicles furnished under this contract, including all components for CONUS and OCONUS. The FSRs shall be located at field sites as authorized to meet the requirements of the contract in a manner that is both economical and beneficial to the Government. The FSRs will be thoroughly experienced and qualified to advise and instruct Government personnel in the operation, maintenance, repair and parts supply of the equipment furnished under this contract. The contractor agrees to make available all required personnel vital statistics related to the representatives furnished under this provision, including documentary evidence such as birth certificates and such evidence as is requested by the Contracting Officer to effect security clearance to the degree required by the installation or area in which services are to be performed. Government approval shall be limited to granting or denying security clearance for the person(s) named.

C.3.1.1 All Services Contract Field Services (CFSs):

a. The contractor shall provide FSRs to perform liaison between contractor/subcontractor, Army Depot Operations other Army organizations and U.S. Marines.

b. The FSRs shall investigate and recommend the need for training. The FSRs shall recommend the need for Failure Analysis (FA) of specific items under other contract work scope.

c. The CFS support shall consist of on-site back-up engineering support and advice in the investigation and resolution of Armed Service support problems.

d. The FSRs work schedule shall coincide with that of associated Government personnel.

C.3.2 Additional Contract Field Services (CFSs):

a. The contractor shall provide CFSRs to locations outside and within the Continental U.S. (OCONUS and CONUS) to support the fielding and sustainment of the Abrams Tank System to Army and Reserve Components as well as U.S. Marine.

b. The CFSR work schedule shall coincide with that of associated Government fielding personnel.

c. The contractor shall provide liaison logistic assistance for the Abrams Tank System to OCONUS and CONUS using unit personnel.

d. Perform vehicle retrofit upgrades and kit installation at various locations.

C.3.3 Reports:

C.3.3.1 The contractor shall report problems, in writing, attendant to its responsibilities to the PEO ASM Material Fielding Team Site supervisor, as necessary. The contractor shall provide specific reports as required to include Field Problem Reports (FPRs) to document Abrams Tank System problems.

C.3.3.2 The contractor shall prepare and submit quarterly reports on all CFS activities using as guidance DI-MGMT-80911 and DI-MGMT-80910.

C.4 System Engineering:

C.4.1 The contractor shall perform system engineering to the extent described below and that required to assure that satisfactory solutions are provided to design problems, design improvement investigations and field problems. Satisfactory solutions are those which maintain compatibility of all physical, functional and technical interface with the established system design and definition. The contractor shall integrate scientific and engineering investigations to ensure compatibility of all physical, functional and technical program interfaces with the established design and definition.

C.4.1.1 The contractor shall comply with the plans and specifications listed below for all solutions to design problems, design improvement investigations and field problems. The contractor shall prepare, maintain and update each plan as directed by the Government.

a. Human Factors Engineering Program Plan

b. System Safety Program Plan

c. Nuclear Survivability Assurance Plan

d. Nuclear Hardness Maintenance/Surveillance Plan

e. Nuclear Survivability Training Plan

f. Electromagnetic Interference (EMI)/ Electromagnetic Compatibility (EMC) Program Plan Additionally, the contractor shall

establish and maintain a data base of allocated EMI/EMC requirements and test results to evaluate the effect of engineering changes on the M1A2 Tank System EMI, EMC, and nuclear electromagnetic pulse characteristics.

g. Reliability, Availability, Maintainability-Durability (RAM-D) Program Plan

h. M1 Abrams Family System and Prime Item Specification

C.4.1.2 In addition to System Engineering required above, the contractor shall:

a. Analyze test data to implement conformance to overall system specifications.

b. Perform system effectiveness studies on proposed modifications relative to the overall system performance in combat and peacetime environments.

c. Provide scientific programming and simulation model analysis in support of resolution for field and production problems.

d. Maintain a current data base of weight data.

e. Provide assistance and support to Abrams Environmental Assessment Program in accordance with the National Environmental Policy Act (NEPA).

f. Maintain a current data base of all Hardness Critical Items (HCIs) used on the Abrams Tank Vehicle Systems.

g. Conduct nuclear hardening reviews on electronic circuits of the Abrams Tank Vehicle Systems and maintain documentation to assure production configuration is hardened to nuclear criteria.

h. Conduct studies and analysis of items used in the tank containing radioactive material.

i. Maintain the fire, accident and hazard tracking systems.

j. Conduct trade-off evaluations and risk analysis to select and document a preferred approach to meeting technical requirements, evaluating design approaches and evaluating producibility techniques and producibility evaluation for any design changes made.

k. Incorporate into the design of components and systems the latest state-of-the-art technology which provides for the highest level of corrosion protection capable of withstanding operation in an environment of high salt concentration, high humidity and high temperature (tropical).

l. Utilize design practices that address selection of materials, coatings, surface treatments, system geometry, material limitations, environmental extreme, and storage, packaging and preservation requirements, and reflect realistic environments and resource availability.

m. Assure that production vehicles comply with requirements for system and component hardening for nuclear effects.

n. Maintain a signature program for continued evaluation of the radar, infrared, acoustic, visual, magnetic and seismic signatures. Electromagnetic signatures over the frequency range of 10KHZ to 12GHZ shall be controlled by the EMI Program Plan.

o. Identify and evaluate design changes which could significantly affect the signature characteristics.

p. Radioactive Material. Radioactive Material will not be utilized unless it has been determined that military operational requirements cannot be achieved without such use. Items furnished under this contract, including but not limited to, optical elements/lenses, and other optic items used near the eyes shall contain no thorium, or other source material as defined by Title 10, Code of Federal Regulations, Part 40, in excess of 0.05 percent by weight or any other intentionally added radioactive material, unless expressly required by the specifications. If required by specification to have thorium, source material as defined by Title 10, Code of Federal Regulations, Part 40, in excess of 0.05 percent by weight or any other intentionally added radioactive material, the contractor shall provide a list of all radioactive material including chemical and physical form and activity of the finished item as early as possible to the manager for approval by TACOM safety.

This information along with procedural controls, to include: Training, necessary protective equipment, required inspections, decontamination procedures, etc,. shall also be maintained.

If radioactive material is not to be furnished beyond that specified above, the contractor shall provide a statement to that effect.

q. If Government furnished radioactive material is to be incorporated into the system, the following as a minimum will be

identified:

1. Listing of the radioactive materials and their quantities.

2. Subsystem location of the radioactive material.

3. Purpose of the radioactive material.

4. Provide the Nuclear Regulatory Commission License Number for each of the radioactive materials used in the system.

r. Maintain the Nuclear Regulatory Commission (NRC) mandatory protection requirements for the purchase, control and installation of all radioactive materials used for the production and logistic support of the Abrams Tank System as described in Title 10, Code of Federal Regulations (CFR) energy.

s. Coordinate each requested change with the affected design disciplines and prepare required new specifications and proposed Specification Change Notice (SCN) IAW Paragraph C.7.6.2.

t. Identify safety hazards associated with the system and prepare and furnish the System Safety Hazard Analysis.

u. Eliminate or reduce significant safety hazards by appropriate design change, material selection or testing and develop a Safety Assessment Report.

v. Develop interface control procedures and documentation and manage the interface between major components and the overall tank system. Interface control procedures shall assure that design changes do not adversely impact the compatibility of all interfaces.

w. Perform Manprint and Human Factors Engineering (HFE) Evaluation on any design changes initiated during this effort.

x. Review Government release changes to Military Specifications and determine their impact on the TDP or production contract. Provide recommendations to resolve any conflicts.

y. Investigate and resolve problems. (Software or hardware pertaining to production or testing.)

C. 4.2 Computer Software Documentation: The contractor shall generate/modify all operational computer software under this contract in accordance with the contractors corporate development standards and Software Development Plan. The contractor shall practice software quality assurance in accordance with the contractors corporate quality standards. The contractor shall use the Ada programming language using guidance with ANSI/MIL-STD-1815A for all operation software generated under this contract except as specifically waived by the Government.

C.5 Product Assurance:

C.5.1 Quality Program: The contractor shall maintain a Quality Program acceptable to the Government for the supplies and services covered by this contract in accordance with ISO 9001, ANSI 9001, and using guidance from MIL-Q-9858 or equivalent. The contractor shall prepare and update a Quality Program Plan. The contractor shall include in the Quality Program those inspections necessary to support the design improvements and maintenance of facility vehicles.

C.5.2 Quality Engineering (QE):

C.5.2.1 The contractor shall provide QE for all system improvement changes per Government approved WDs and requests for services. The contractor shall perform a QE review of all drawings and specifications and conduct QE analysis to determine the type and amount of inspection and test controls that are necessary to achieve the required quality of the Abrams Tank System. The QE analysis shall be accomplished at a point in time which will assure that the resulting recommended inspection controls are processed as part of applicable ECPs. The QE portion of the TDP shall be maintained as follows:

C.5.2.1.1 Prepare and maintain the Quality Assurance Requirements (QARs) using TACOM Pamphlet DRSTA-P-702-101 as a guide and Quality Assurance Provisions (QAPs) using Pamphlet DARCOM-R-702-2 as a guide.

C.5.2.1.2 Prepare and maintain the Inspection Method Control (IMC) Sheets using TACOM Pamphlet DRSTA-P-702-133 as a guide.

C.5.2.2.1.3 Prepare and maintain the Section 4, "Quality Assurance Provisions" (QAPs), for new specifications. TACOM Pamphlet DRSTA-P-702-102 may be used as a guide. Revise and update the Section 4, "Quality Assurance Provisions", of existing specifications for the contract and maintain with reference to the engineering requirements set forth in Section 3 and Section 5 of the specifications.

C.5.2.1.4 Prepare and maintain the Final Inspection Records (FIRs). TACOM Pamphlet DRSTA-P-702-100 may be used as a guide.

C.5.2.1.5 Prepare the Item Modification Inspection Requirements. Include the in-process and final acceptance inspection requirements necessary for installing industrial and field modifications.

C.5.2.1.6 Prepare the Quality Assurance End Item Pamphlet. The pamphlet shall contain the technical instructions and procedures for inspection operations. This pamphlet is intended as a guide for quality assurance personnel, outlining inspection requirements, lessons learned and potential trouble areas. The contents of the pamphlets are not meant to replace the detailed inspection procedures for which the manufacturer is responsible.

C.5.2.1.7 Prepare the QAPs for Depot Maintenance Work Requirements (DMWRs) and reconditioning standards. TACOM Pamphlet DRSTA-P-702-152 may be used as a guide. Incorporate all inspection and tests, to be performed at the place of reconditioning during the reconditioning of item(s), that are necessary to ensure that the reconditioned item(s) meet the quality requirements of the applicable specifications and standards.

C.5.2.1.8 Prepare, maintain, and update Quality Assurance Inspection Equipment (QAIE) design, instructions, and software. TACOM Pamphlet DRSTA-RP-702-120 and Sample Drawing 78952223 may be used as a guide. In connection with performance of this effort the contractor shall prepare calculations, layouts, sketches, schematics, charts, drawings and other visual depictions of proposed QAIE. The contractor shall produce prototype gages and demonstrate their capability prior to release of new or updated QAIE drawings. Instructional manuals and procedures shall be prepared and maintained for the operation, maintenance, and calibration of the QAIE. A master list of QAIE shall be maintained.

C.5.2.2 As necessary in performance of the QE work on this contract, the contractor shall perform tests and inspections to validate changes and modifications. Such tests will be those necessary to evaluate the QARs for the Abrams Tank Systems.

C.5.2.3 The contractor shall perform QE support to tank production in the resolution of manufacturing/vendor problems, interpretation of Quality Documentation, perform analysis of inspection requirements to improve vehicle
quality and prepare the necessary engineering changes to correct/improve the TDP Quality Documentation.

C.5.3 Quality Problem Investigations:

C.5.3.1 The contractor shall conduct investigations of quality problems originating from field activities, repair depots, supplies of Government-Furnished Equipment (GFE) items and other such activities per Government approved WDs. This effort shall include the review of problem reports, evaluation of quality deficiencies, clarification of inspection requirements and similar functions. The contractor shall develop appropriate documentation, solutions and ECPs.

C.5.3.2 Records: The contractor shall prepare and maintain complete and up-to-date records of all QE work performed or accomplished for the contract item(s) on this contract. These records shall be of such extent and detail as to allow the Government to determine the status and progress of all work being planned or accomplished. The Government shall have access to the contractor's working records when required for Government purposes.

C.5.3.3 Control:

C.5.3.3.1 The contractor may use the forms and formats listed below in performance of the QE work performed under this contract:

STA Form 4452	General Quality Assurance Requirements (QARs)
STA Form 4452A	Quality Assurance Requirements (QARs)
STA Form 4452A-1	Quality Assurance Requirements (QARs) (Continuation Sheet)
STA Form 4452B	Quality Assurance Requirements (QARs) Inspection Method Control (IMC) Sheet
STA Form 4452B-1	Inspection Method Control through (IMC) Formats
STA Form 4452B-36	DARCOM Form 2484R Quality Assurance Provisions (QAPs)

C.5.3.3.2 In addition to the requirements set forth elsewhere in this contract, the contractor may use the guidance provided by the following TACOM Quality Assurance Pamphlets:

DRSTA-P-702-100	Preparation of Final Inspection Record (FIR)
DRSTA-P-702-101	Handbook for Preparation and Maintenance of Quality Assurance Requirements (QARs)
AMSTA-RP-702-102	Preparation and Review of Quality Assurance Provision (QAP) of Specifications for Tank-Automotive Application

DRSTA-P-702-112 Design of Weldments for Precision Inspection Equipment

DRSTA-P-702-114 Handbook for Selection and Design of Acceptance Inspection Equipment for Involute Splines

DRSTA-P-702-118 Handbook for Selection and Design of Acceptance Inspection Equipment for Straight and Parallel-Sided Splines

DARCOM-R-702-2 QE Handbook for Preparation and Maintenance of Quality Assurance Provisions (QAPs)

DRSTA-RP-702-120 Tolerancing, Dimensioning and Gaging Techniques

DRSTA-P-702-126 Inspection Engineering Data Microfilm Procedure

DRSTA-P-702-133 Handbook for Preparation and Inspection Method Control (IMC) Sheets

DRSTA-P-702-152 Preparation of the Quality Assurance Provisions (QAPs) of Depot Maintenance Work Requirements (DMWR's) for Tank-Automotive Application

C.6 Integrated Logistics Support (ILS):

C.6.1 Integrated Logistics Support (ILS) Program: The contractor shall conduct an ILS Program in support of the Abrams Tank Systems Program as described below. The contractor shall integrate the efforts of its subcontractors and Government-Contractors supplying Abrams components and major items of support equipment.

C.6.1.1 Pollution Prevention and Integrated Logistic Support Elements: The contractor shall include environment, hazardous and toxic material; safety and pollution prevention in development of all ILS documentation to include the Integrated Support Plan (ISP) required for each milestone throughout the acquisition Life Cycle.

C.6.1.2 Logistics Support Analysis (LSA) and LSA Record (LSAR): LSA effort under this contract shall be the genesis for ILS. The LSA shall lead and drive the ILS effort as front-end analysis, all Logistics Support efforts and shall also apply to engineering change and software development efforts conducted under this contract, as well as Government approved logistics engineering changes necessary to change logistics support elements. Engineering Change Requests (ECRs) shall not be implemented without LSA coordination and concurrence.

C.6.1.3 Logistics Support Analysis (LSA)/Logistics Support Analysis Record (LSAR) Maintenance: The contractor shall conduct LSA and maintain LSAR as a result of ECPs, DA Forms 2028, approved suggestions, Supply and Maintenance Assessment Review Team (SMART) initiatives and as directed by the Government.

C.6.1.4 LSA Program: The contractor shall conduct a full LSA Program and maintain it with continuously updated LSA/LSAR data. The overall LSA/LSAR Program shall be conducted with guidance from MIL-PRF-49506, MIL-STD-1388-1A and MIL-STD-1388-2B . LSAR Data Elements shall be completed and maintained in contractor format.

C.6.1.4.1 COMPASS,PALMAN or equivalent modeling shall be used for repair level and analysis (to the piece part level) modeling by the prime contractor and his subcontractors.In addition to COMPASS or equivalent modeling, the contractor shall provide scientific programming and utilize model analysis to determine retrofit/modification recommendations, repair/ discard considerations in support of design activities. Existing LSA models to be employed as appropriate are:

PALMAN, Repair versus Discard Model
USAPRO, Usage Age Distribution Projection

C.6.1.5 RESERVED

C.6.1.6 Support Equipment LSA/LSAR: The LSA/LSAR for major items of support equipment such as the test sets (Simplified Test Equipment Family of Vehicles (STE-M1/FVS), and Direct Support Electrical Systems Test Set (DSESTS)) shall be conducted separately from the Abrams Vehicle LSA/LSAR.The LSA will be performed for the Direct Support Electrical Test Set (DSESTS).

C.6.1.7 Maintenance Allocation Chart (MAC): The contractor shall maintain a MAC and develop changes as required resulting from the LSA. The MAC shall be a product of the LSA/LSAR process reflective of the appropriate LSA Reports, records and data. Changes to the MACs will be provided to the Government for concurrence. Changes shall be incorporated as directed by the Government.

C.6.1.8 LSA/LSAR Reviews: LSA/LSAR reviews shall be conducted as required. The contractor shall provide participation by LSA Managers to serve on the LSA/LSAR review team. The contractor shall prepare conference minutes for each review.

C.6.1.9 ILS Program Planning: The contractor shall prepare an update to the existing Integrated Support Plan (ISP). The ISP shall be updated to reflect changes emanating from program changes, reviews, reorganizations, and other actions affecting program

logistics at the direction of the Government.

C.6.1.10 LSA Plan: The contractor shall update the existing Abrams LSA Plan as required by program changes, reviews or at the direction of the Government.

C.6.2 Provisioning:

C.6.2.1 Provisioning Requirements. The contractor shall establish and maintain a Parts Master File (PMF) (LSA-036) for all provisioning data. The file shall reflect the latest vehicle configuration, including engineering design changes, historical data and changes to specific data fields as directed by the Government. Upon termination of this contract, the LSAR PMF shall be delivered to the Government.

C.6.2.2 Engineering Data for Provisioning (EDFP). The contractor shall provide drawings as required using guidance from DI-ILSS-81289. Required assembly drawings shall be made available at each provisioning conference for Government review.

C.6.2.3 EDFP or Supplemental Provisioning Technical Documentation (SPTD). The contractor shall submit data on all parts to be provisioned that do not currently have a National Stock Number (NSN). EDFP consists of data needed to indicate the physical characteristics, location and function of the item (Form, Fit and Function).All approved vendors commercial and Government Entity/Federal Supply code for Manufacturers (CAGE/FSCM) are to be cited by the contractor (typed, stamped, or in legible writing with authorized signature and date) on drawings when furnished concurrently with each submitted increment of provisioning documentation for each "P" coded items.

C.6.2.4 Provisioning Guidance Conference. A provisioning guidance conference shall be conducted at the Contractor's facility in conjunction with the start of work meeting. At the conference, the contractor shall identify his proposed schedule of and approach for provisioning items to be delivered.

C.6.2.5 Provisioning Parts List (PPL). The contractor shall develop and deliver the required Provisioning Part List (PPL). DD Form 1949-3 or commercial equivalent will be used to identify provisioning data elements to be delivered. All submissions shall be via electronic media.

C.6.2.6 The contractor shall maintain and continuously update the LSAR database by comparing with Government supplied data files of the Provisioning Master Record (PMR) on a mutually agreed upon schedule.

C.6.2.7 The contractor shall conduct pre-procurement DLSC screening, Logistics Remote Users Network (LOGRUN) for standardization of all commercial items selected as repair parts. This screening will be used to select valid part numbers for input to the Provisioning Master Record (PMR) for total support of the end item. All vendor source information identified on the drawing will be screened. The contractor LSA-036 submittal shall be updated to reflect the current prime part numbers that have a National Stock Number (NSN) as indicated by the results of the screening processing documentation for each new or revised commercial item selected as a repair part.

C.6.2.8 Maintenance Replacement Rates (MRR). The contractor shall develop, in conjunction with the Government, methods for determining the MRR based on guidance in MIL-STD-1388-2B using the following data:

1. Engineering Data
2. Testing & Developmental Documentation
3. Historical Data of a Similar Piece of Equipment

C.6.2.9 MRR 2 is the wartime failure rate and will be at a minimum 2.5 times (for TACOM submissions) and 1.5 times (for ACALA submissions) greater than that of MRR 1 (peacetime).

C.6.2.10 Expendable Consumable Items. The contractor shall ensure that only items which are repair parts, or part of the end item's top-down generation breakdown, will be loaded to the PMR.

C.6.3. Provisioning Quality Acceptance Standards: The quality standards outlined in ADMSM 18-LEA-JBE-ZZZ-UM-C6 shall be used as a guide and applies to all phases of the provisioning effort.

C.6.4. Logistics Planning Documentation: The contractor shall assist in the development, preparation and distribution of Material Fielding Plans, Agreements, Transfer Documents and other Logistics associated plans for fielding of the Abrams Tank and related equipment.

C.7 Configuration Management (CM): The contractor shall continue the operation and maintenance of the previously implemented CM System, which delineates the contractor's procedures for controlling changes to the Configuration Item. The contractor has full control of the M1A2 Abrams Technical Data Package with exception that the government retains full control over the M1A2 System Specification SA-S0001 dated July 16,1990, Prime Item Product Fabrication Specification SC-SA10000, Revision E, dated 2 October 1995, and the Final Inspection Record (FIR) Revision R dated 2 October 1995. The Government retains configuration control over all of the items provided as GFM. Any changes to items over which the government maintains configuration control requires approval by a Contracting Officer via

execution of a contract modification.

C.7.1 The contractor shall update and maintain the current CM Plan. The plan shall address the requirements identified by the contract and guidelines established in MIL-STD-973, (making maximum utilizations of previously developed information) and supporting data. The contractor shall monitor all ECPs and related configuration activities of the Abrams Program through all areas of activity to assure design compatibility between, and within, systems.

C.7.1.1 The contractor shall be responsible for providing direction and guidance to subcontractors and Government contractors, as appropriate, in the operation and maintenance of their CM Systems to assure proper interface with the overall Abrams CM Program. The contractor shall provide to the Government a Lotting and Serialization Report.

C.7.1.2 Configuration Identification: Requirements for Configuration Identification for the Abrams Tank are set forth below. The contractor shall update Configuration Identification Records to incorporate approved changes.

a. Functional Configuration Identification (FCI): Approved System Specification, SA-X-00001H and approved changes incorporated therein is the FCI for the M1 approved System Specification SA-X00004B and approved changes incorporated therein is the FCI for the IPM1. Approved System Specification SA-X00003D and approved changes incorporated therein is the FCI for the M1A1. Approved System Specification SA-SA00001B and approved changes incorporated therein is the FCI for the M1A2.

b. Allocated Configuration Identification (ACI): Interface Control Documentation (ICD) for Government-Furnished Equipment (GFE).

c. Product Configuration Identification: All product specifications, product drawings and related documents used for production are the Product Configuration Identification (PCI).

C.7.1.3 The contractor shall prepare and provide electronic access to product specifications.

C.7.2 Configuration Control: CR/ECPs shall be prepared and processed for formal U.S. Government evaluation and approval/disapproval action on items which the government retains control using MIL-STD-973 as a guide. The contractor shall prepare an ERR for each approved ECP, initial release of an item.

C.7.3 RESERVED

C.7.4 Technical Data/Configuration Management System (TD/CMS):

C.7.4.1 ECPs Affecting Defense Logistics Agency (DLA) Items: The contractor shall be responsible for furnishing electronic access through ECARDs, of the approved CR, ECP, ERR and revised drawings for the appropriate DLA. The DLA Offices will be notified by EMAIL when the ECP or CR is approved and upon issuance of an ERR. The location of the DLA Offices are as follows:

Code No.	Location
S9C	Commander Defense Construction Supply Center 3990 E. Broad Street ATTN: DCSC-VTAA Columbus, OH 43216-5000 kenneth_adkins@dscc.dla.mil
S9E	Commander Defense Supply Center Columbus ATTN: DSCC-VTAA Columbus, OH 43216-5000 Kenneth_adkins@dscc.dla.mil
S9G	Commander Defense General Supply Center Jefferson Davis Highway ATTN: DSCR-VADA Richmond, VA 23297-5000 vpsmith@dscr.dla.mil
S9I	Commander Defense Supply Center Philadelphia 700 Robbins Avenue ATTN: DISC-JLTA Philadelphia, PA 19111-5096 mhughes@dscp.dla.mil

C.7.4.2 Drawing/Part Number Assignment Report: Drawing/Part Numbers shall be obtained upon requests submitted to TACOM. The contractor shall maintain a record of all drawings/part numbers assigned which shall be available.

C.7.4.3 Drawing Custodianship: The contractor shall prepare and maintain a master list of original released drawings which shall be available.

C.7.4.4 Listing of Original Drawings and Documents Being Transferred:

C.7.4.4.1 Upon termination or completion of the contract, the contractor shall prepare and furnish a list of drawings generated under or accountable to this contract.

C.7.4.5 Technical Document Storage: The contractor will store engineering technical documents (Product Drawings, Specifications, Quality Assurance Records, Supplemental Quality Assurance Procedures, Final Inspection Record, Quality Assurance Inspection Equipment Drawings, Specification Change Notice, Engineering Change Proposals, Change Requests, and Engineering Release Records). The system will provide automated document retrieval and distribution service. The contractor shall store optical disks and CD Roms of software used on the vehicle and will make copies available upon request by the COTR.

C.7.5 Engineering Drawings:

C.7.5.1 The drawings (originals) and revisions thereto required to be accessible pursuant to this contract shall be Product Drawings, using guidance from MIL-STD-100 except as otherwise provided by this contract.

C.7.5.2 It is essential that the drawings and software/firmware documents possess the following adequacy requirements (except as otherwise provided within the contract) for competitive procurement. Detail subassembly and assembly drawings shall completely delineate, directly or by reference to other documents, engineering requirements and characteristics such as materials, dimensions, tolerance, fit, form and finish. The drawing requirements and characteristics shall also include, as applicable, any electrical, mechanical performance and other requirements necessary for functions and interchangeability. Requirements and characteristics for all drawings and software/firmware documents required shall be sufficiently complete and detailed to enable the Government to perform engineering review, design evaluation and product acceptance, inspection and installation. These drawings and software/firmware documents shall contain sufficient detailed data to enable the Government or its contractor to procure or reprocure the item or to obtain a substitute item. Drawings for all repair parts shall contain complete protective finish requirements such as paint and/or plating.

C.7.5.3 The set of drawings created by the contractor will include all drawings necessary to fully describe the design, manufacture, construction and transportability of the item. The contractor shall not prepare drawings or lists of standard military and/or Commercial Off-the-Shelf (COTS) components the Government directs the contractor to use for which Government release drawings or lists are already in existence. When revising an existing drawing, the original drawing format shall be followed for any changes unless otherwise directed by Government Design Activity.

C.7.5.4 Source Control Technical Data:

C.7.5.4.1 Requirements for Source Control Drawings (SCDs) shall conform to the following:

a. Maximum use of commercially developed components is essential. No part, component or subsystem shall be developed under this contract when it is known that an existent design in industry will satisfy the intended purpose or, can reasonably be adapted to a militarized design in a cost effective manner.

b. In order to assure life cycle competition for Non-Developmental Items (NDIs), use of SCDs shall be minimized. When it becomes apparent to the contractor that a Source Control drawing is in the best interest of the Government, a recommendation will be made to the Contracting Officer's Technical Representative (COTR) including the results of a Market Survey which led to the recommended selection. No SCD shall be prepared by the contractor, nor shall the contractor assume that the Government will accept the Source Control recommendation, unless specific written approval is provided by the COTR.

c. Recommendation for use of Source Control data shall not be submitted to the Government until a repair/ throw away analysis has been made.

d. NDIs shall not be fully detailed unless it can be demonstrated by the contractor that such detailing does not impair the life cycle competitiveness of the item.

e. Provisioned parts for Source Controlled items shall be depicted on the drawing after a Maintenance Evaluation has been completed and repair part selection validated. In the event such Maintenance Evaluation has not been prescribed within the scope of this contract, even though the component is known to be repairable, no provisioned parts listing will be shown on the drawings.

f. All SCDs shall contain sufficient information, using guidance from MIL-STD-100 for the Government to procure and accept a

part or component which is functionally interchangeable with the original part or component under a secondary item procurement contract and to qualify additional sources. Acceptance criteria and processes on any SCD will, to the extent practical, be similar to what that supplement accomplishes when the item is purchased by other commercial or military agencies. In the event that the contractor is unable to meet the requirements of these paragraphs, supporting rationale (including schedule risks) for a deviation shall be submitted with the request for Source Control. Approval to the Source Control will constitute approval of the deviation.

C.7.5.4.2 SCDs shall be prepared only upon written authorization from the COTR. Requests for authorization to use SCDs shall be accompanied by a written justification. A copy of the Non-Standard Parts Approval Request (DD Form 2052) shall be submitted with the justification.

C.7.5.4.3 Engineering Drawing Ordering Data: The contractor shall complete the Product Drawings and supporting technical data using MIL-STD-100 as a guide.

C.7.5.5 Rights: Data prepared for items exclusively developed with Government funds by the contractor or its subcontractors shall be with unlimited rights. All other data related to all other items shall be prepared in form, fit and function format as defined in the Rights in Technical Data and Computer Software clause of the contract.

C.7.5.6 Approval of Engineering Drawings: An approved DD Form 2052 shall be required for all non-standard parts and an approved justification for all SCDs prior to drawing approval sign-off.

C.7.5.7 All new drawings shall be prepared in Computer Aided Design (CAD).

C.7.5.8. TDP Generation: The contractor shall prepare and maintain TDPs for Abrams Vehicles in accordance with the approved Configuration Plan.

C.7.6 Standardization:

C.7.6.1 Parts Standardization: The contractor shall continue to maintain the parts control program utilizing procedure 1 of MIL-STD-965 as a guide.

C.7.6.1.1 All parts proposed for addition to the Program Parts Selection List (PPSL) or items submitted for Engineering Change Proposals (ECP's) will be screened by the contractor and approved by the Government prior to addition to the PPSL. For parts in Federal Supply Classes (FSC's) which require Military Parts Control Advisory Group (MPCAG) review. The parts approval request may be submitted by faxed DD Form 2052 or E-mail. A list of parts with other FSCs shall be made available for review by the Government for the purpose of selective screening.

C.7.6.1.2 Unless a request is provided to the Government by the contractor for exception/approval, recommendations (DD Form 2052) made by the MPCAG's is considered final.

C.7.6.2 Specifications:

C.7.6.2.1 Specifications and standards shall be considered and selected in the descending group and subgroup of preference indicated in using Paragraph 5 of MIL-STD-970 as a guide, unless the acquisition documents specify the specific specifications and standards to be used.
C.7.6.2.4 New specification and proposed Specification Change Notice shall be incorporated in an CR/ECP and submitted to the Configuration Control Board (CCB) for final action.

C.7.6.2.5 The application of specifications, standards and related documents shall be limited to documents specifically cited in the contract as requirements, and to specified portions of documents directly referenced therein (first tier references). All other referenced documents (second tier and below) shall be guidance only, unless specifically identified in the contract.

C.7.7 Software/Firmware Configuration Control: The contractor shall operate a software/firmware configuration control system that assures positive control of release and changes to new and existing software/firmware. Software development libraries shall be maintained using an automated configuration control tool. Changes to software contained in the library shall be made only upon appropriate contractor engineering authorization. Initial release for production or user testing of new software/firmware shall be controlled in the same way as drawing release. Release of changes to previously released software/firmware for production or user testing shall be authorized by the contractor System Change Control Board in the same manner as drawings. Change history files and archives shall be utilized to insure disaster recovery. A centralized software vault shall be maintained to store master copies of both executable and source code software media. Off-site storage of backup copies shall be maintained for both executable and source code software media.

C.8 Design Improvement Investigations:

C.8.1 The contractor shall conduct a program of design improvement and study for the purpose of improving performance and RAM-D of

the Abrams Tank System. The contractor shall present design reviews and recommendations to the Government on the feasibility of implementation of the design improvements. The Government may direct investigations into the following areas of tank design:

a. Fire Control Interface Projects.

b. Electrical Projects.

c. Armament Projects.

d. Auxiliary Systems Projects.

e. Engine/Power Train Interface Projects.

f. Structures Project.

g. Armor Projects.

h. Suspension Projects.

i. Integration and Assembly Projects.

j. Special Vehicle Equipment Projects.

k. Test Measurement and Diagnostic Equipment (TMDE).

l. System Software Projects.

m. Vetronic Unique Equipment.

n. Other Projects.

C.9 Analysis of Field Problems:

C.9.1 The contractor shall evaluate Test Incident Reports (TIRs), Equipment Improvement Recommendations (EIRs), Recommended Changes to Publications (DA Form 2028), Government Suggestions (DA Form 1045), Unsatisfactory Equipment Reports (UERs), and similar documents to determine whether a change is required in the Abrams Logistics Support System, to include tools, test sets, Technical Manuals (TMs), and maintenance concepts. If the contractor determines that a change in maintenance concept is required, the contractor shall prepare and furnish a Level of Repair Summary Report in Contractor format.

C.9.2 The contractor shall maintain a continuing program for analysis of system, component and TMDE deficiencies based upon inputs obtained by field engineers or furnished by the Government. The contractor, where necessary, shall fabricate hardware for engineering tests; conduct engineering tests, monitor user tests; prepare final designs and develop Source Data for an ECP.

C.9.3 The contractor shall resolve long term problems and develop quick fixes to field problems as they arise. The quick fixes shall provide interim solutions to field problems on an expedited basis. The resulting documentation/data shall be the minimum required to implement the fix. The contractor shall then develop the data further through testing, cost effectiveness studies and design reviews that shall result in a change to the documentation in the system TDP.

C.9.4 The above analysis of field requirements and definitions is intended to provide analysis and resolution of problems at Government field sites and manufacturing locations. Analysis of field problems is not to be used for recurring production activities such as the routine return, tear downs and inspection of non-compliant hardware from manufacturing sites. The contractor shall ensure that any subcontractor effort required for analysis of field problems is not applied to recurring production problems.

C.10 Software Support Equipment: The contractor shall maintain the software development, software configuration management and software integration & test effort and shall include maintenance of laboratory equipment, procurement of updated tank hardware as the production hardware changes and operation of a system problem report data base and closed loop resolution system. The contractor shall also maintain the Abrams computer simulators (SIMNET, CITV COFT, Table top trainers) with the latest Soldier Machine Interface per the most current software version.

C.11 Packaging Development.

C.11.1 Packaging Requirements: The contractor shall provide initial packaging requirements for items provisioned for the subject vehicle system. The contractor shall provide the facilities, material, and the access to parts needed for packaging development.

C.11.1.1 Items INCLUDED are those assigned Source Maintenance and Recoverability (SMR) codes with the first two positions of the code

being PA, PB, PC, PD, PE, PF, or PG.

C.11.1.2 Items EXCLUDED are those items with packaging data already in the TACOM Packaging File "PACQ" or FEDLOG and those assigned a Contractor and Government Entity Code (CAGE) of:

1T416, 21450, 80204, 96906, 10060, 24617, 80205, 99237, 80244, 81343, 81346, 81348, 81349, 81352, 88044

Also EXCLUDED are items for: (1) not mission capable supply; (2) depot operational consumption; (3) not-for-stock supply; (4) Direct Vendor Deliveries -CONUS only and items that are not military unique(e.g. items that have a commercial market).

C.11.1.3 The contractor shall assess engineering and logistic changes for packaging impact. The contractor shall provide revisions and additions to the data.

C.11.1.4 The contractor is responsible for packaging development status. This includes engineering and logistic changes showing the status of packaging development for these changes. The contractor shall make available the packaging development status of each provisioned item upon request.

C.11.2. Packaging/Logistics Data Entry the contractor shall classify items requiring packaging development as Selective, or Special to determine the packaging requirements

1. Selective Group Items: Items that do not require a drawing, sketch, illustration, narrative type instructions, and do not exceed 40 pounds, have any one dimension which exceeds 40 inches, or have a length and girth of over 84 inches. Item packaging for these items can be appropriately defined by coded elements.

2. Special Group Items: Items shall be considered Special Group Items if:
   a. If narrative instructions or figures are needed to describe packaging requirements.
   b. Kits, sets, and items consisting of separate parts.
   c. Items that require disassembly for packaging.
   d. Items requiring special handling or condemnation procedures.
   e. Items considered Hazardous for Transport.
   f. Items considered to have a shelf-life.
   g. Items excluded from the Selective Group.

C.11.2.1 The contractor shall provide for transmittal of packaging data entries to the TACOM Packaging File (PACQ). The contractor shall provide read/write access to each packaging data entry prior to transmittal of data entries to the TACOM Packaging File. The contractor shall provide the electronic data interface.

C.11.2.2 The information provided, Logistics Data and Packaging Data, shall apply to a single item and shall include

1. National Stock Number (NSN)
2. Packaging Indicator Code (IPC)- Code for each level of protection authorized(e.g. Military or Commercial)
3. Type Storage Code (TSC)- Code identifying, by level of protection, the type storage facility allowed(e.g. Unheated warehouse, Controlled Humidity Storage, Open Storage)
4. Pack Level Reference Indicator (PLRI)- Code for each level of packing authorized (e.g. Level A, Level B, or Commercial)
5. Local Control Code - Code identifying contractor providing data
6. For SPIs - Document revision, Document date, and number of sheets.
7. Technical Data/Configuration Management System (TDCMS) code
8. Shelf life code
9. Packaging references
10. Item name
11. Item weight
12. Item length
13. Item width
14. Item depth
15. Packaging Category Codes
16. Special Marking codes
17. Quantity per unit pack
18. Quantity per intermediate pack
19. Item drawing CAGE and number
20. Preservation method Code
21. Cleaning method code
22. Preservative material code
23. Wrap material code
24. Cushioning material code

25. Cushioning thickness code
26. Unit container code
27. Intermediate container code
28. Packing requirements codes
29. Unit pack weight
30. Unit pack length
31. Unit pack width
32. Unit pack depth
33. Unit pack cube
34. SPI Julian date

C.11.2.3 The contractor shall have available Logistics information for each item as follows:
(a) performance test report(where appropriate), (b) item drawings, (c) photographic record of package and testing(where appropriate), (d) Source, Maintenance, & Reliability(SMR) Codes, (e) Unit of Issue Codes(f) Unit of Measure, Measurement Quantity, and (g) copies of Material Safety Data Sheets. Logistics information shall be delivered or made available for Government review upon request.

C.11.3 Special Packaging Instructions (SPI) For each item classified as Special, the contractor shall prepare a SPI

C.11.3.1 The contractor shall perform packaging design validation testing on special group items where there is not previous successful test records for the same or similar packaged item.

C.11.3.2. All SPIs shall be prepared in Government acceptable electronic format, and made available for review and comment. The contractor shall provide entry of approved SPI images into the Joint Engineering Data Management Information and Control System (JEDMICS).

C.11.3.3 The contractor shall provide configuration data for all SPIs to the TACOM Technical Data Configuration Management System (TDCMS). The contractor shall provide read/write access to all data prior to transmittal to TDCMS.

C.11.4 Transportability Instructions The contractor shall provide and update the transportability instructions, and publish them as a stand-alone pamphlet.

C.11.4.1 The contractor shall include processing for shipment in a drive-on, drive-off configuration. The contractor shall develop processing for: (1) Short term TRANSPORT/Storage (180 days maximum, (2) Controlled Humidity storage (4 years maximum), and (3) Open storage (2 years maximum). Exercising requirements will also be included for each of the two LONG-TERM storage conditions.

C.11.4.2 All self-propelled Vehicles and mechanical equipment containing internal combustion engines or wet batteries are subject to requirements of Code of Federal Regulation Title 49, for truck and rail transport, International Maritime Dangerous Goods Code, for vessel transport, and AFJMAN 24-204, for Military air. Instructions will reflect all special requirements. The contractor shall include disassembly procedures to meet requirements for the applicable mode.

C.11.4.3 The contractor shall include packaging instructions for the Basic Issue Items (BII) and Components Of the End Item (COEI). The BII shall be packed separately from the COEI.

C.11.4.4 The contractor shall include figures showing the stowage location and security provisions for the BII and COEI. The stowage locations shall deter pilferage and shall not interfere with lifting, tie down or other transportation handling requirements.

C.11.4.5 The contractor shall provide revisions to the transportation instructions for each design change affecting the vehicle shipping configuration, weight, or transportability. The contractor shall also provide revisions to the instructions for each logistics change affecting packaging instructions for BII or COEI.

C.11.4.6 The contractor shall validate instructions. Validation shall verify the adequacy of the preservation, packaging, packing and stowage of BII/COEI, the preservation procedures for shipment and storage, and the exercising requirements for vehicles in long-term storage. Government Representative will verify and witness the contractor validation.

C.11.5 Container Design Retrieval SYSTEM (CDRS)
This is a management system program to provide a DOD centralized automated data base system for storing, retrieving, and analyzing existing container designs and test information concerning specialized containers.

C.11.5.1 The contractor shall make Search Requests for all reusable container designs. The purpose of the CDRS is to avoid duplication in container designs, minimize the number of new container designs being developed and promote reuse of existing DOD reusable containers for new item development and procurement.

C.11.5.2 The contractor shall provide assessment data. To determine if existing container designs are suitable, the contractor shall assess fit and function of existing containers and compare costs of modifications and alternate new designs.

C.11.6. Reusable Container Development upon Government approval, the contractor shall make a reusable container estimate for each new repairable item which, by the application of engineering, economic, and other factors, could be reasonably restored to a serviceable condition through regular repair procedures. The estimate shall include cost of development/design, validation, completion of the technical data package for competitive procurement, container life cycle, and container production cost. A life cycle cost analysis will be made and compared with a container that protects the item from damage and deterioration when exposed to the standard storage and distribution requirements defined in ASTM D4169, distribution cycle 18, assurance level I, criterion 2. Maximum use of these containers is stressed.

C.11.6.1 Guidelines for determining when reusable containers are desirable include:

1. The container can serve two purposes -
   a. As a shipping and storage container
   b. As a case while the item is in use

2. The cost of a reusable container is offset through multiple reuse as compared to the cost of a single shipment disposable container.

3. The item may be recovered, repaired, or returned.

4. The need for periodic inspection or "exercising" the contained item justifies a reusable container.

5. Item fragility dictates shock-absorbing system.

6. Economics of package and shipping costs vs. damage costs for each of several different package designs

C.11.6.2 The contractor shall validate Reusable Container designs upon Government approval of validation testing estimates. Notice of validation Testing will be provided at least 30 days prior to the proposed test date. Validation testing of containers will establish the capability of the containers to protect the integrity and serviceability of the items for which the containers are designed. Instrument Records shall establish the capability of the container to protect the integrity and serviceability of the item for which the container is designed. Containers of this type frequently incorporate energy absorbing systems, dehumidification systems, and other special features to insure protection to the item, and which can be repaired and/or retrofitted to prolong its life or modified to adapt it for shipment of items other than that for which it was originally intended. Government Representative will verify the contractor validation.

C.11.6.3 The contractor shall provide validation testing reports and photographic records for the container tests. The report shall contain, as appropriate, a description of the tests performed, results, shock and vibration recordings, static and dynamic clearances within the container, and conclusions.

C.11.6.4 Upon government approval of the tested Reusable Container design report, the contractor shall complete a Technical Data Package (TDP) for the item(s) designated. The TDP shall include engineering drawings and associated lists in sufficient detail to provide for competitive procurement.

C.12 Support for Government-Furnished Vehicles:

C.12.1 General: The contractor shall provide on-site maintenance support and technical services required to restore to operable condition Government-owned assets prior to, during and/or subsequent to transportation to destination. This support is for limited repair and shall not include major rework of an end item.

C.12.2 Facility Vehicles:

C.12.2.1 The contractor shall perform vehicle maintenance and component control of all facility vehicles. The contractor shall perform as needed no less than once a year periodic preventative maintenance and establish a permanent record of serialized components. The contractor shall maintain a condition and configuration status of all facility vehicles.

C.12.2.2 The contractor shall maintain the facility vehicles IAW the Government Property Article of the contract. No later than 30 days prior to completion of the contract performance period, the contractor shall inspect the facility vehicle and prepare and submit DA Form 2407 to verify and document that this requirement has been met. The contractor shall maintain the vehicles and associated support equipment to support the STS effort.

C.12.2.3 The contractor shall update and maintain all other facility vehicles to the latest practical production configuration. The contractor shall provide maintenance of facility vehicles necessary to ensure serviceability to include performance of scheduled maintenance.

C.12.3 Parts and Tool Support: Repair parts and tools to support Government-furnished vehicles shall be acquired IAW the procedures outlined below:

C.12.3.1 Common Parts and Tool Support at Contractor's Facilities: Common items with a made unit cost of less than $500 shall be obtained through the contractor's procurement system. Items exceeding the $500 threshold shall be requested from PM Abrams Tank Systems, Logistics Management Division, who will verify the requirement and initiate a requisition if the item is available in the Government supply system. If the item is not available in the Government supply system, the contractor shall procure the item upon notification of non-availability of PM Abrams Logistics Management Division. The contractor shall ship via commercial means and pay transportation costs, which will be reimbursable under the contract.

C.12.3.2 Common Parts and Tool Support at Government Facilities: Common items will be requisitioned by Government facility personnel. If the parts and tools requirement cannot be met in this manner, the contractor shall acquire the items in the manner detailed in Subparagraph C.12.3.1.

C.13 System Test Program Description:

C.13.1 Overall Test Program:

C.13.1.1 The contractor shall coordinate the planning, execution and evaluation of all contractor testing, the supply of support and services required for all contractor and Government testing, monitoring at Government test sites and reporting requirements. The permanent relocation of contractor technical representatives' to remote field test sites is authorized to meet requirements of the contract in a manner that is both most economical and beneficial to the Government. In addition, the contractor shall provide the necessary special test facilities, all effort and material necessary for conducting essential contractor in-house testing, including subcontractor's testing required in support of Government test and evaluation objectives.

C.13.1.2 The contractor shall correct deficiencies identified by the Government Inspectors inspecting tanks during initial receipt at Government test sites.

C.13.1.3 The contractor shall furnish the necessary technical management for planning and execution of support and services for conducting systems tests.

C.13.1.4. The contractor shall procure and maintain state-of-the-art timers and counters and special test equipment in test vehicles specified in the system test schedule. Included shall be equipment and software required for the downloading of documentation, distribution, and processing of test data and reports/records.

C.13.1.5 The contractor shall provide System Support Packages (SSPs) or other maintenance and/or spare parts support for M1 Abrams series and derivative test vehicles for their continued operation throughout the period of this contract. This includes repair/replacement of tanks subsystems/components in order to bring the test vehicle(s) into satisfactory condition for test/ training/logistics events.

C.13.1.6 The contractor shall prepare and/or review test plans/reports.

C.13.2 System Testing:

The Abrams Tank System Testing shall include, but shall not be limited, to the following:

a. Ballistic Hull and Turret Testing, if required.
b. One FPT every other year.
c. Track Tests.
d. M1A2 FMS System or Subsystem testing as required.
e. Heavy Assault Bridge Test
f. Abrams Live Fire Test Program, as required.
g. Simulation Modeling support,as required
h. Abrams Crusader Common Engine Integration
    i. M1A2/M1A2 SEP Product Improvement Verification Testing
j. Other tests,as required

C.14 Reliability, Availability and Maintainability-Durability (RAM-D) Program:

C.14.1 RAM-D Program Plan:

C.14.1.1 Contractor shall update the Abrams Tank System Reliability and Maintainability Program Plan(s) to reflect the current phase in the M1 life cycle. Tasks shall be oriented toward insuring the RAM-D attributes as required by the Abrams Tank Specification is not degraded during full scale
production. Upon acceptance by the Government, the updated RAM-D Plans shall become part of this contract.

C.14.1.2 Contractor shall update the current Abrams Tank RAM-D Model. As part of this update, the contractor shall provide a projected new model which identifies frequency of replacement of component. The contractor shall update the model using the most current test and field data.

C.14.1.3 Contractor shall perform special RAM-D evaluation and analysis as determined necessary by the Government. Special evaluation and analysis maybe required for Product Improvement Program (PIP), rebuilt and/or Cold Region Test Center (CRTC) tests.

C.14.1.4 Contractor shall provide analysis and support to Government scoring, aggregation and close-out conferences and provide support to corrective action meeting for the Abrams Tank Test Program as required by WD. Contractor shall prepare documentation, presentations and consolidation of corrective actions in support of scoring conference for system testing.

C.14.1.5 Contractor shall maintain and analyze field/test data on a continuing basis to identify RAM-D pattern problems. These candidates will be input to the corrective action program.

C.14.1.6 Contractor shall perform RAM-D evaluation and analysis as determined necessary by the Government

C.14.1.7 Contractor shall conduct failure analysis of failed hardware IAW the RAM-D Program Plan from field and test sites for all System Testing. Test failure analysis coverage may be deleted or substituted as authorized by the Government. The contractor will receive a discount when they use a Government test site.

C.14.1.8 Contractor shall maintain a closed loop system to report, analyze and generate corrective actions for failures encountered during System Testing. Contractor shall maintain a continuous record of open and closed TIRs. The contractor shall record the length of time and the incident by classification. Record shall be provided to the Government on the first of each month.

C.14.1.9 Contractor shall receive Test Incident Reports (TIRs) from the Government during vehicle tests. After engineering evaluation, the contractor shall furnish the Governments corrective action response for material and workmanship related deficiencies or shortcomings. The corrective action responses will be reviewed with the Government at regularly scheduled meetings.

C.14.2 RAM-D Controls:

C.14.2.1 Contractor shall maintain a closed loop data base which incorporates details of each test incident, failure analysis and corrective action associated with System Testing. Some failure analysis and corrective action may be excluded on a test-by-test basis.

C.14.2.2 Contractor shall establish/maintain reliability and maintainability interfaces and controls with engineering, quality/product assurance, manufacturing, production, ILS and subcontractors.

C.14.2.3 Contractors RAM-D Office shall continue sign-off authority and review for all ECPs, drawings, deviations, waivers, part application and production process changes.

C.15 ILS Automated Data Processing (ADP) Systems Development:

C.15.1. The contractor shall provide computer systems analysis function to design new systems, and prepare computer program requirements and definitions within the ILS organization for support of the Abrams Tank Systems.

C.15.2. The contractor shall provide computer system analysis to definitize system data problems in the development and release of new computer systems for the Abrams Tank Systems.

C.15.3. The contractor shall provide computer system analysis to definitize and ensure integrity of system data methodology in the development and release of new ILS Computer Systems.

C.16 Special Tools and Support Equipment:

C.16.1 The contractor shall conduct a program to support the tools, special tools and test equipment for new or redesigned components. If tools or test equipment require change as a result of design change or field identified problems, an ECP shall be prepared.

C.16.2 The contractor shall provide the necessary personnel, services, materials, and facilities to acquire and deliver to the Government, prototype and final configuration model tools and support equipment, along with adequate numbers of spares and support LSA/LSAR data. The contractor shall validate the redesign, and incorporate necessary changes, as part of the tool redesign/design effort.

C.16.3 All support equipment technical data shall be subject to CM and Government approval. When a support equipment need is indicated, the contractor shall follow the order of precedence below in submitting a suggested item:

a. Use of equipment available to Abrams Tank using units or Abrams Tank support units.

b. The modification of already available equipment or a Table of Organization and Equipment (TOE) change which authorized the recommended item at a lower level.

c. The use of a Federal Supply item by adding it to the unit's TOE as common equipment.

d. The use of a Federal Supply item by adding it to the Abrams Tank Repair Parts and Special Tools List (RPSTL) as a

special item.

e. The development of a new support item.

C.16.4 The most current series TOEs shall be provided by the government as required for use in making support equipment determinations.

C.16.5 Table of Distribution and Allowances (TDA)/TOEs for National Guard units, as approved and implemented, shall be used to make support equipment determinations related to fielding of National Guard units.

C.16.6 In addition to LSAR, the contractor shall maintain, and furnish to the Government as required, special tool records and documentation. These shall include, but are not limited to, drawing and print files; prototype or production procurements; implementation of ECRs, EIRs, and field suggestions.

C.16.7 Test Measurement and Diagnostic Equipment (TMDE):

C.16.7.1 The Contractor, through the Government Abrams Project Manager's Office (PMO), shall assist as required in providing technical direction to the TMDE Prime Contractor.

C.16.7.2 Government-Furnished Information (GFI) in support of the engineering effort, field personnel, and the validation of engineering changes; source code listings, to include fault messages/fault message indices to all STE and/or DSESTS Test Program Sets (TPS) shall be furnished by the Government. In addition, TMDE contractor generated documentation of software changes; Engineering Memorandums of Software Change Notices shall be furnished by the Government as an on-going effort.

C.16.8.4 Test Measurement and Diagnostic Equipment Support and Systems Coordination:

C.16.8.4.1 The Contractor shall perform a systems coordination function of TMDE activities for the Government Abrams PMO as required.

C.16.8.4.2 The contractor shall interface directly with the TMDE Prime Contractors; on all technical aspects related to the DSESTS M1/Fighting Vehicles Systems (FVS) and Turbine Engine Diagnostics (TED) Programs.

C.16.8.5 Government-Furnished Equipment (GFE): In support of the engineering effort and to validate engineering changes, and to support TMs and validation/ verification, one (1) complete DSESTS-M1/FVS,) and other applicable test equipment shall be furnished by the Government.

C.16.8.6 TMDE Initiatives: The contractor shall review, comment, analyze and provide written responses/reports to questions and requested investigations from the Government Abrams PMO.

C.16.8.7 Analysis of Field Problems:

C.16.8.7.1 The contractor shall maintain a continuing program for field analysis of Abrams TMDE and component problems based upon inputs obtained by field support or Government data sources. This activity shall include all disciplines required to perform analysis of field problems.

C.16.8.7.2 The contractor shall provide the Government copies monthly of all new Test Set Reports (TSRs) and TSR Analysis Sheets. The contractor shall identify the nature of each problem, status of analysis and implementation of problem solutions, and those problem reports closed in the previous month. In addition, the contractor shall provide each TMDE contractor copies weekly of all new TSRs written about its respective test set.

C.16.8.7.3 The contractor shall prepare for and participate in RAM scoring conferences related to TMDE. The contractor shall analyze all Test Incident Reports (TIRs) associated with test equipment usage and provide responses to be presented at the scoring conferences.

C.16.8.8 Analysis of Tank Changes: The contractor shall maintain a continuing program for analysis of all Abrams ECP/Request for Deviation/Waiver (ECP/RFD/W) to assess their impact to TMDE hardware and software and provide copies of all ECP/RFD/Ws potentially impacting TMDE to the appropriate TMDE contractors. For those ECPs assessed by the contractor as having TMDE impact, the contractor shall perform IAW Paragraph C.17.8.10.

C.16.8.9 Reserved

C.16.8.10 Corrections/Changes to TMDE: When the analysis of C.16.8.7 and C.16.8.8 determine the need for change to TMDE to correct problems or maintain compatibility with the Abrams Tank System, the contractor shall provide the following services:

a. For Hardware Corrections/Modifications:
   (1) Investigate and analyze test set related deficiency reports to identify nature and source of each problem.
   (2) Investigate and analyze test set related operational test problems to include failure reports and the like.
   (3) Develop solutions to problems related to system operation, vehicle test, failures, hardware/firmware,

performance, and documentation.

(4) Conduct investigations, studies, or programs as approved by specific WDs for TMDE hardware.

b. For Tank/TMDE Physical/Function Interface Corrections/Modifications:

(1) Provide on-site support or investigation and/or field tests upon request.

(2) Work with the appropriate TMDE contractor to perform functional or interface noncompatibility analysis where vehicle application adversely impacts test set physical/functional configuration baseline.

c. For Software Corrections/Modifications:

(1) Investigate and analyze test set related deficiency reports to identify nature and source of each problem.

(2) Develop solutions related to system operation, diagnostic failures, and message interpretation.

(3) Conduct investigations, analysis, or programs as approved by specific WDs for TMDE software.

C.16.8.11 TMDE Software. The contractor shall work with the appropriate TMDE contractor to ensure the compatibility of TMDE software to the Abrams Program.

C.16.8.12 DSESTS-M1/FVS Validation: The contractor shall perform validation of proposed engineering changes and product improvements to the DSESTS-M1/FVS diagnostic test set. This shall apply only to changes to the M1 peculiar applications programs and commonly shared executive program.

C.16.8.13 Software Retrofit:

a. The contractor shall assist the Government and TMDE Prime Contractors in the coordination of all software field updates associated with the DSESTS-M1/FVS.

b. The contractor shall recommend when a software update should be performed based on the magnitude and significance of the software corrections/modifications.

C.16.8.14 Government-Furnished Equipment (GFE) Repair: The Government will provide for the maintenance and repair of all GFE TMDE provided for the performance of this program.

C.16.8.15 Support Services: The contractor shall provide support relating to the contract items and data at Government specified locations. Such services consist of training; coordination, attendance at program, technical and logistics meetings; support of Government tests; and field review of deficient or defective items, as required. The contractor shall develop special interim or work around procedures/techniques using testing sets to solve M1 field problems (e.g., Electronic Control Unit (ECU) trim test).

C.16.8.16 Fielding Coordination:

Abrams Tank Technical Manuals (TM?s): The contractor shall coordinate the planning of draft troubleshooting changes to the Abrams Tank TM's with retrofit of fielded test set hardware/firmware to ensure their concurrent delivery to field sites.

C.16.8.17 Configuration Management (CM):

Configuration Change Review: The contractor shall review all ECPs and RFD/Ws on TMDE hardware and software, which are furnished by the Government or TMDE contractors. The review shall assess the compatibility of the proposed changes with the Abrams Tank Configurations, potential impact to Abrams logistic support element (e.g., LSA, TM's, Training), and the quality aspects of the change.

C.17 Modification Work Order (MWO) Planning: The need for modification occurs as a result of an ECP or as a result of a logistics support consideration wherein the modification is considered desirable or necessary as a result of safety consideration or improvements in logistics support. MWOs, for fielded vehicles, shall be developed under the direction of TACOM-Warren and TACOM-ACALA National Maintenance Points (NMPs) who will manage and control the application of MWOs. As a part of Management and Administration, the contractor shall assist the Abrams Tank MWO Program by early identification of the need for a MWO and recommending through SFAE-ASM-AB-L that action be taken to initiate the MWO preparation. The recommendation will include, but not be limited to, an ILS retrofit milestone chart, a man-hour estimate per tank to accomplish the change, a complete LSA package necessary to complete the change/retrofit to the fielded fleet, and multimedia enhancement recommendation. The recommendation will include, but need not be limited to, an ILS retrofit milestone chart, a man-hour estimate per tank to accomplish the change, and a complete LSA package necessary to complete the change/retrofit to the fielded fleet. During preparation and application of MWOs the contractor shall provide technical assistance in MWO accomplishment. The recommendation for MWO shall be made by the contractor on all ECPs that involve a recommendation for retrofit action to the fielded fleet. Application of MWO's for test/prototype vehicles shall be managed by the contractor.

C.18 Technical Training Support:

C.18.1 The contractor shall perform necessary review of ECPs, engineering data, and LSA/LSAR, and shall perform written analysis of those jobs/tasks which are determined to require formal training/retraining. A quarterly report of recommended changes to Army training packages shall be provided to the Government.

C.18.2. Upon notification, the contractor shall design and develop training course/curriculum outlines, Students Training Course Guides, Instruction/Lesson Guides and Audio Visual, Master Reproducibles and Review Copies for Training Equipment and Training

Courses, necessary to teach the jobs/tasks the Government has selected for training. The contractor shall provide the Government with the recommended jobs/tasks for training from which the Government will select jobs/tasks for the training course.

C.18.3. The contractor shall conduct training at Government selected training sites. Training shall be designed to provide key individuals, already qualified in their operational and maintenance specialties, those instructions and/ or orientations necessary to increase their knowledge, skills and techniques to the degree required to perform selected job tasks. Training materials shall be validated prior to conducting training for Government personnel unless the training materials are GFE (i.e., training material provided for roll-over transition training).

C.19 Training Equipment:
C.19.1 The contractor shall provide design support to already fielded training devices.

C.19.2 The contractor shall design, develop and fabricate prototype of new items of training support equipment or validation aids as requested by the Government. The need for such items shall be determined by evaluation and changes in vehicle design or the development of new maintenance/ troubleshooting/training techniques, procedures or philosophies. Items developed under this section shall be presented to the Government for evaluation.

C.20 Special Projects: The contractor shall support special evaluation on Abrams Tanks for all Special Projects.

C.21 Contract Total Package Fielding (TPF):

C.21.1 The contractor shall provide contractor personnel as necessary to conduct TPF Programs, to include MACOM and MACOM transfers, using DA Reg 700-142 as a guide. The contractor shall provide overall program management, planning, analysis, coordination and computer support to accomplish all TPF Program requirements.

C.21.2 Formal and informal status meeting(s) shall be conducted as determined necessary by the COTR or Functional Technical Representative (FTR) and/or as agreed to and required by approved WDs. Reports of formal status meetings shall be prepared and submitted using guidance from DI-ADMIN-81250 and DD Form 1423.

C.21.3 As requested by the Government, contractor personnel will assist Government personnel at TPF meetings.

C.22.4 The TPF representatives shall conduct TPF handoff(s) of all required equipment and TMs to the gaining unit for all initial TPF packages. TM(s) may be provided by the contractor as directed by the Government.

C.21.5 The TPF representatives shall conduct TPF handoff(s) of equipment to the gaining unit for all "mini-packages" or follow-on TPF issues when directed by the Government. To obtain Government direction for the issuance of "mini-packages", the contractor will provide a detailed list as an enclosure for all TPF "call forward" letters of notification. This list will identify all items in the "call forward" by NSN, nomenclature and quantity, further identifying required amount, amount received and still due out subsequent to the "call forward" for this specific package.

C.21.6 The contractor shall provide computerized data in formats requested by the Government. The contractor will update formats and computer programs to ensure availability of data to the U.S. Government (USG).

C.22 Depot Logistics Engineering:

C.22.1 Depot Support Data: Data developed under other contracts or other sections of the contract which have CDRL and DIDs specifying the form, format and delivery procedures when required by the Government shall be obtained via procedures already specified. Other data exists in which the Government has a vested interest, but it was not identified by a CDRL or DID at the outset of the contract. Essential data required for depot support activities shall be submitted IAW the Work Directive. Examples are: (1) production salvage/rework procedures covered by waivers and deviations, (2) Specifications/details of Government-Owned Contractor Procured Production Equipment, and (3) Test/Inspection Data and Reports of Government funded tests.

C.22.2 Reclamation Procedures: Contractor shall assist in the identification of high dollar items in which development of reclamation procedures is considered necessary/feasible. Contractor shall provide detailed specific criteria as required in development of these procedures. Testing/verification of these procedures will be performed as necessary to ensure the validity/minimum specification requirements. Hardware for testing/verification will be provided to the contractor as GFE.

C.22.3 Wear Limit Development: Contractor shall develop limits as required on those items in which like new specification requirements are identified as being stringent and relaxation of those limits shall not be restricted to the development/generation of wear specifications. Testing/validation shall be conducted on all items in which form, fit and function is critical/controlled. Under this section of the workscope, the contractor when tasked by WD will determine data availability, determine format/content as necessary for the purpose required and analyze, reformat and deliver the data in support of the depot logistics engineering program.

C.22.4 Reliability Centered Maintenance (RCM): The contractor shall provide technical assistance in the application of RCM concepts to the Abrams depot support program. As part of the depot RCM Program, the contractor shall assist in the following tasks:

a. Evaluation of component data.
b. Evaluation of EIRs and DA 2028s.
c. Use of Army Oil Analysis Program (AOAP) data.
d. Development of Combat Vehicle Overhaul Criteria (CVOC) for the Abrams and major Abrams components.
e. Conducting Optimum Repair Level Analysis (ORLA)/ Economic Evaluation.
f. Development of depot work arounds and alternative methods for interim and/or minor repair/maintenance programs.

C.23 Technical Data Package (TDP) Revisioning Services: The contractor shall provide revisioning services for Foreign Military Sales (FMS). Revisioning services are to include copies of ECPs and respective ERRs.

C.24 Publications:

C.24.1 The contractor shall prepare changes/ revisions or new Technical Publications supporting the M1/IPM1/ M1A1/M1A2 Combat Tank IAW the basic fielded manuals (examples; Hand Receipt/Operator's/Unit Maintenance/Direct Support/General Support/Schematics manuals/Modification Work Orders) and DD Form 1423, with exception of the Repair Parts and Special Tool List.

C.24.2 The Repair Parts and Special Tools List (RPSTL) shall be prepared IAW attached DD Form 1423 to include National Stock Numbers on the part list page as specified by the Government. The National Stock Numbers are to be added off-line by the contractor for drafts and final draft manuals.

C.24.3 A publication history file shall be maintained by the contractor for the period of this contract. This file shall contain a record of all changes to each publication as a result of Government-approved ECPs and DA Form 2028s.

C.24.4 Contractor shall assure that required assemblies, parts, support, equipment, tools, personnel and facilities are available for Contractor Validation and Government Verification.

C.24.5 Publication In-Process Reviews (IPRs) shall be held as determined by the Government.

C.24.6 The contractor shall deliver the technical manuals in paper and also in a Portable Document File (PDF) format on a CD-ROM per DD Form 1423's. The CD-ROM shall conform to ISO standard 9660.

C.24.7 Timely delivery of acceptable publications is essential for field support of end items procured under this contract. If delivery is late or publication(s) unacceptable, the Contracting Officer reserves the right to delay Government inspection and/or acceptance of end items until such time as acceptable publications are received and approved.

C.24.8 All publications material (quantities IAW DD Form 1423) shall be delivered transportation costs pre-paid. Delivery shall be made to the Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-LC-CILT, Warren, Michigan 48397-5000 unless notified otherwise. Material shall arrive at its destination no later than the delivery date established by PM Abrams.

C.24.9 Quality Assurance (QA) is the responsibility of the contractor.

C.24.10 The Contractor shall provide Technical Manual Status and Schedules upon request.

C.24.11 Contractor is authorized to use a digital image instead of a line drawing where deemed practical, taking into account the purpose and suitability of the illustration in the publication.

C.24.12 For technical publication, as required and/or directed, the contractor shall create multimedia enhancements to new, existing, or updated publications. Delivery of such documentation shall be in paper format, CD-ROM, video tapes, and/or as directed.

C.25 Development of Improvements to Contract Vehicle Systems

C.25.1 The Contractor, as authorized by work directives, shall furnish the supplies and services necessary:

a. to develop improvements to the Contract Vehicle System,
b. to integrate improvements into the tank system, and
c. to provide technical support and interface concerning the Abrams Tank to related developmental programs. Support and interface to other programs is limited to providing technical information, data, and expertise on Abrams Tanks, Derivative Vehicles and related equipment.

C.25.2 The contractor shall perform system analysis, definition, integration planning, preliminary design, and full development as specified by work directive. Work may include engineering, producibility, prototyping, test (both conduct of contractor and support to Governmental testing), RAM-D, quality assurance, configuration management, safety, MANPRINT, and integrated logistics support as specified by work directive and the applicable paragraphs of the statement of work. Technical data and computer software required from this work will be specified by work directive.

C.25.3 During system analysis, definition, integration planning, and design, the contractor shall ensure that logistics, producibility, quality, human factors safety, MANPRINT, test, RAM-D, and environmental impact are considered. All trade-off evaluations conducted shall include consideration and an estimate of production cost and, if applicable, retrofit and further development costs in the study.

C.25.4 As required by work directive, the contractor shall participate in the following reviews:

a. Systems Requirements Review;
b. System Function Review;
c. System Design Review;
e. Preliminary Design Review; and
f. Other interim program reviews as required.

The contractor shall prepare minutes for these reviews.

C.25.5 As required by work directive, the contractor shall support Government demonstrations of Abrams developmental systems and components. These demonstrations of developmental systems may include but are not limited to Army Warfighting Demonstrations and Experiments and Rotations at the National Training Center. Support may include the design and documentation of the system or component improvement as well as on-site technical and logistics support to the demonstration.

C.26 Year 2000 Compliance

C.26.1 The Contractor shall ensure products provided under this contract, to include hardware, software, firmware and middleware, whether acting alone or combined as a system, are Year 2000 compliant as defined in FAR Part 39.0002.

*** END OF NARRATIVE C 001 ***

Name of Offeror or Contractor: GENERAL DYNAMICS LAND SYSTEMS INC.

SECTION G - CONTRACT ADMINISTRATION DATA

LINE ITEM	PRON/ AMS CD/ MIPR	ACRN	OBLG STAT/ JOB ORD NO	PRIOR AMOUNT	INCREASE/DECREASE AMOUNT	CUMULATIVE AMOUNT
0053AA	474FUM0247 31206406017 A14P30172R47	FS	2 4GAAPM	$ 0.00	$ 14,030,818.00	$ 14,030,818.00
0053AB	473FUM0247 31206406019 A13P30192R47	DK	2 3GAAPM	$ 0.00	$ 1,503,650.00	$ 1,503,650.00
0053AC	472FUM1347 31206406020 A12P30202R47	BV	2 2GAAPM	$ 0.00	$ 615,532.00	$ 615,532.00
				NET CHANGE	$ 16,150,000.00	

SERVICE NAME	NET CHANGE BY ACRN	ACCOUNTING CLASSIFICATION		ACCOUNTING STATION	INCREASE/DECREASE AMOUNT
Army	BV	21	22033000025R5R02P31206431E9 S20113	W56HZV	$ 615,532.00
Army	DK	21	32033000035R5R02P31206431E9 S20113	W56HZV	$ 1,503,650.00
Army	FS	21	42033000045R5R02P31206431E9 S20113	W56HZV	$ 14,030,818.00
				NET CHANGE	$ 16,150,000.00

	PRIOR AMOUNT OF AWARD	INCREASE/DECREASE AMOUNT	CUMULATIVE OBLIG AMT
NET CHANGE FOR AWARD:	$ 448,317,158.00	$ 16,150,000.00	$ 464,467,158.00

**DFAS PLEASE NOTE: DISPURSE OLDEST FUNDS FIRST!

*** END OF NARRATIVE G 008 ***